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G4A

## (54) Data Handling Apparatus

(57) Data handling apparatus for a book maker includes means 12 for storing and updating data representing the amounts wagered on, for example, each runner in a horse race, the odds in respect of each runner, and the total amount wagered. This information is displayed on a display unit 10 along with the book maker's liabilities for various possible outcomes of the race, such that it is readily apparent if the odds should be adjusted or bets laid off. The book maker's odds may be displayed on a display panel 4, which is connected to the storage means 12.

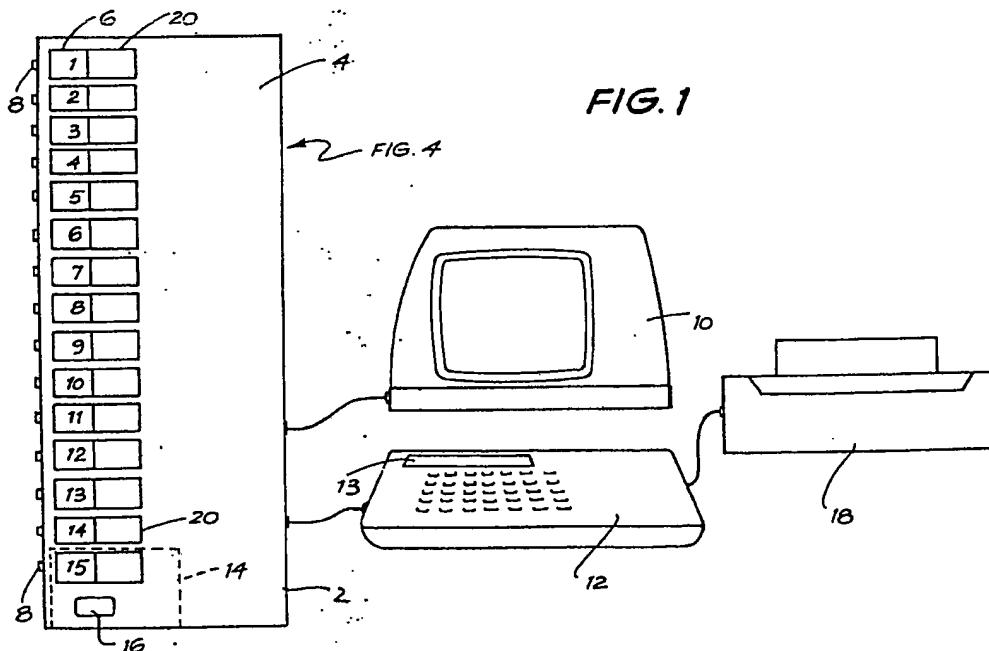
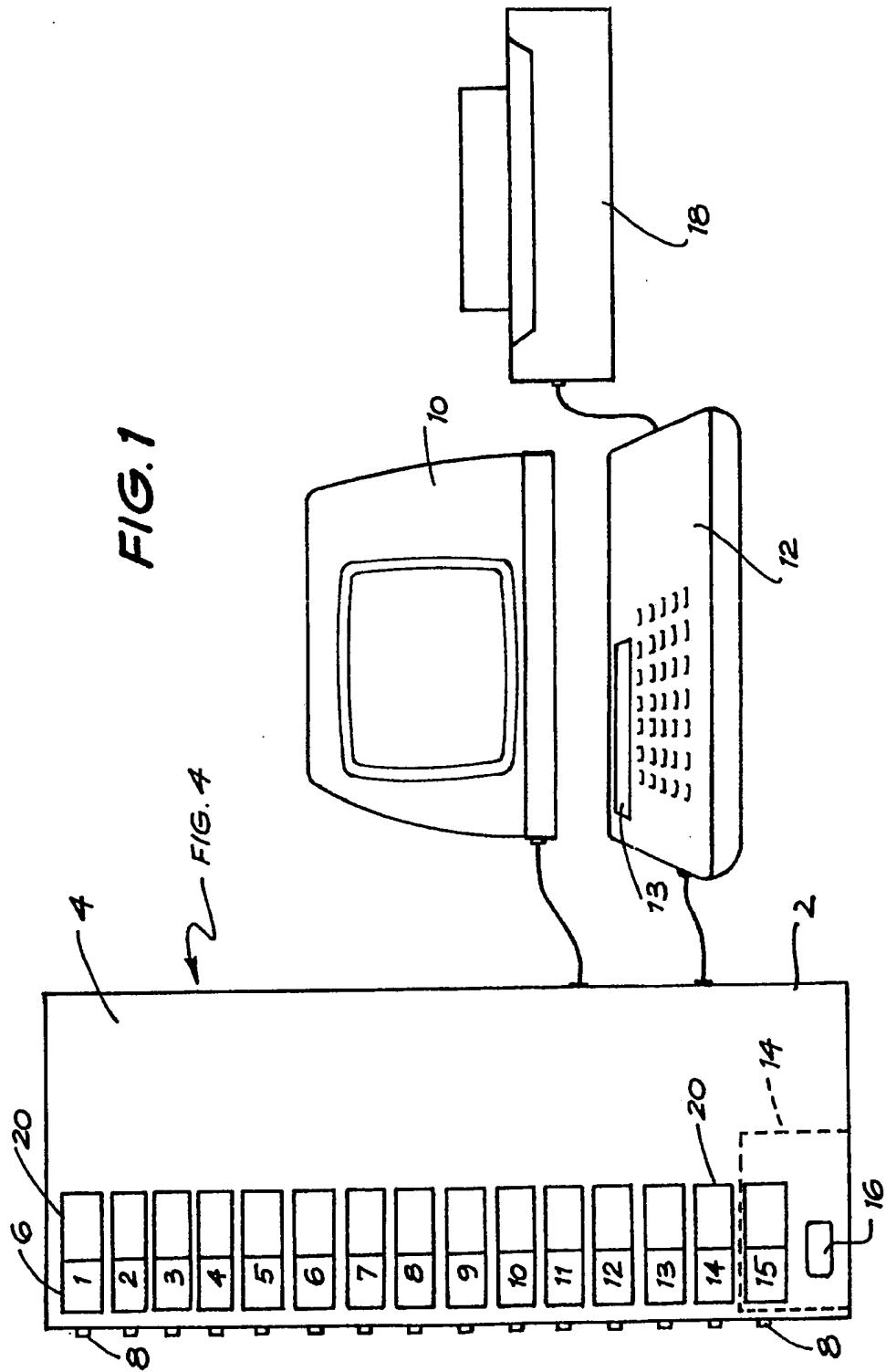


FIG. 1

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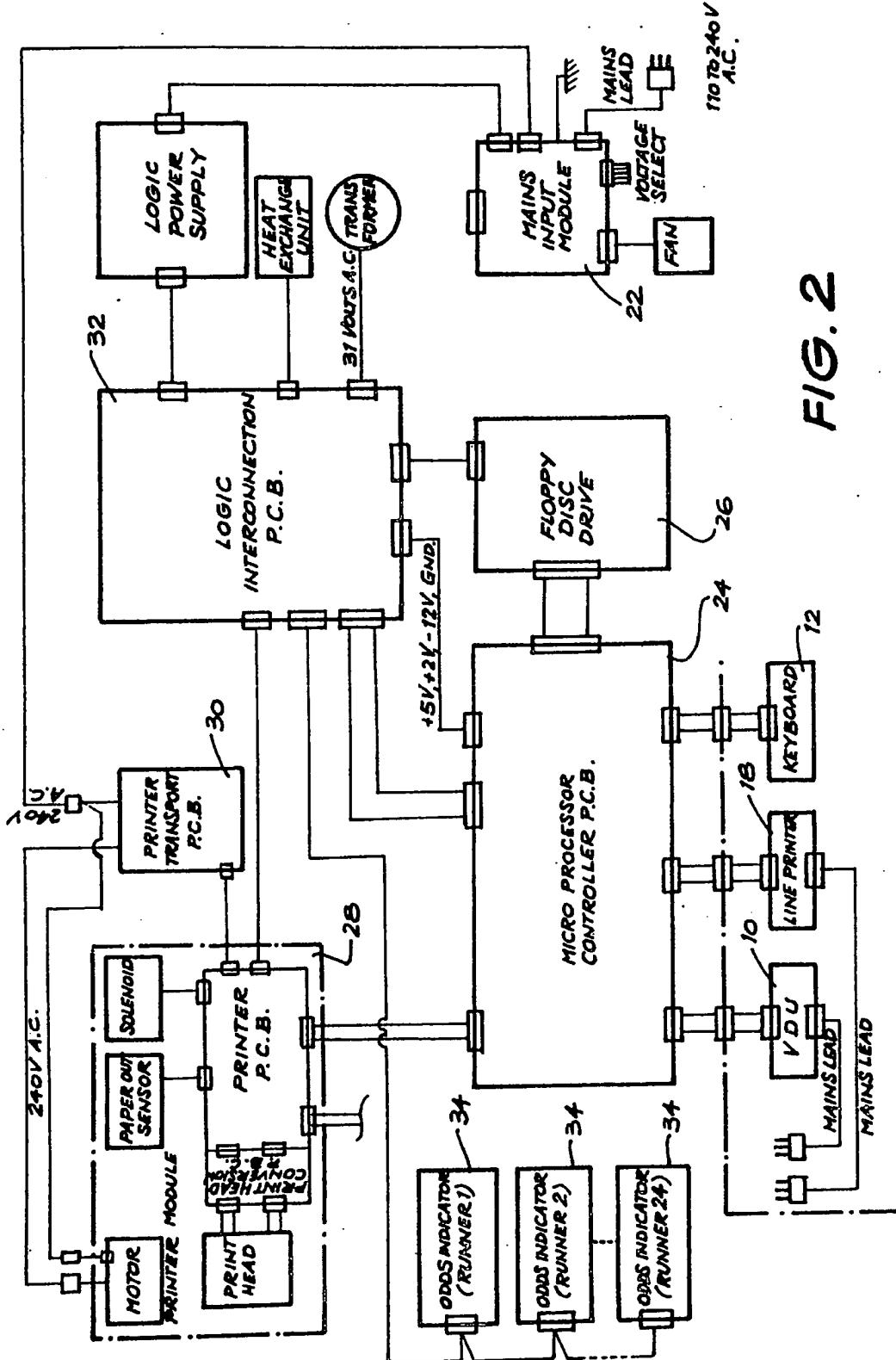
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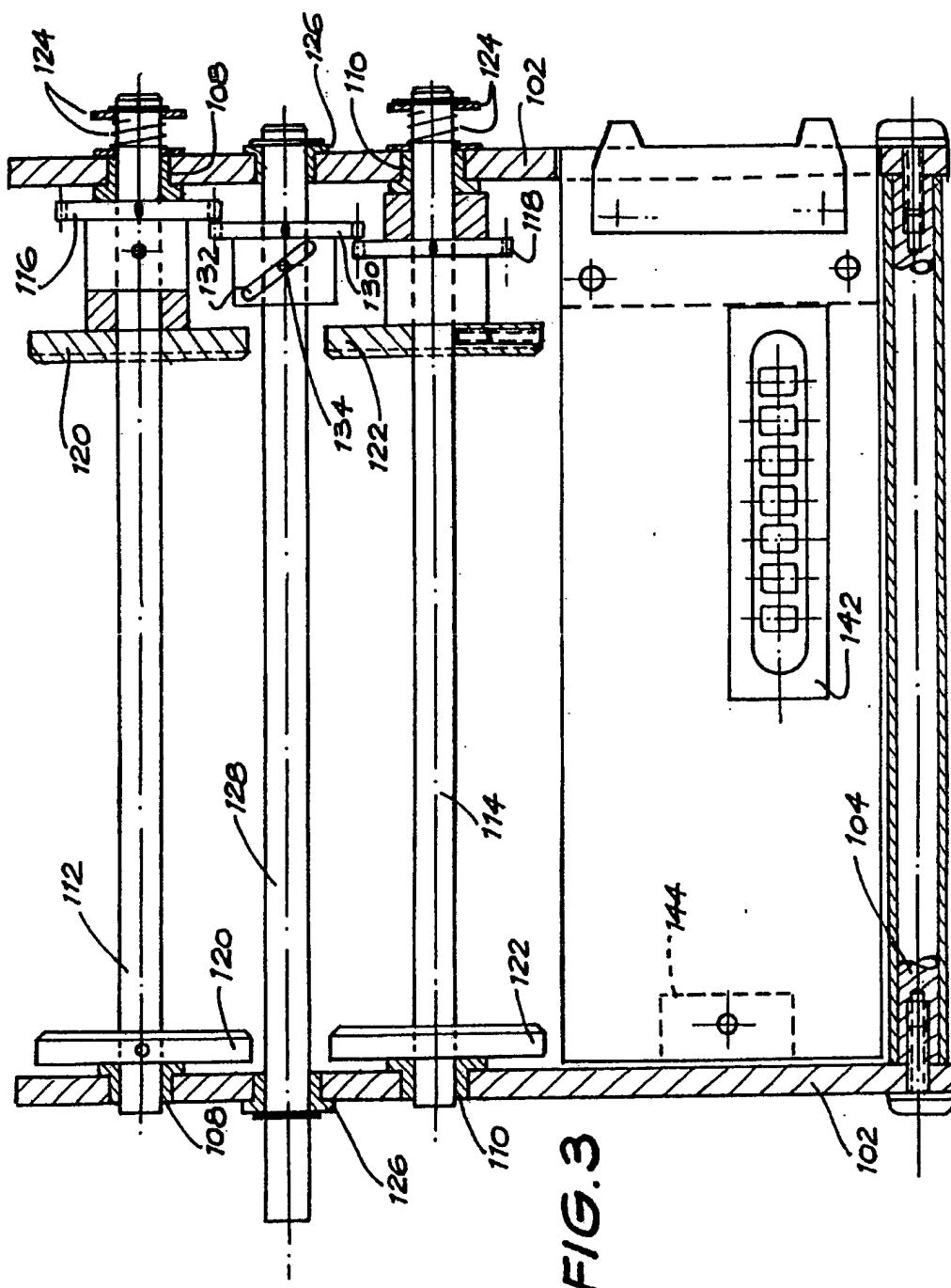


FIG. 3

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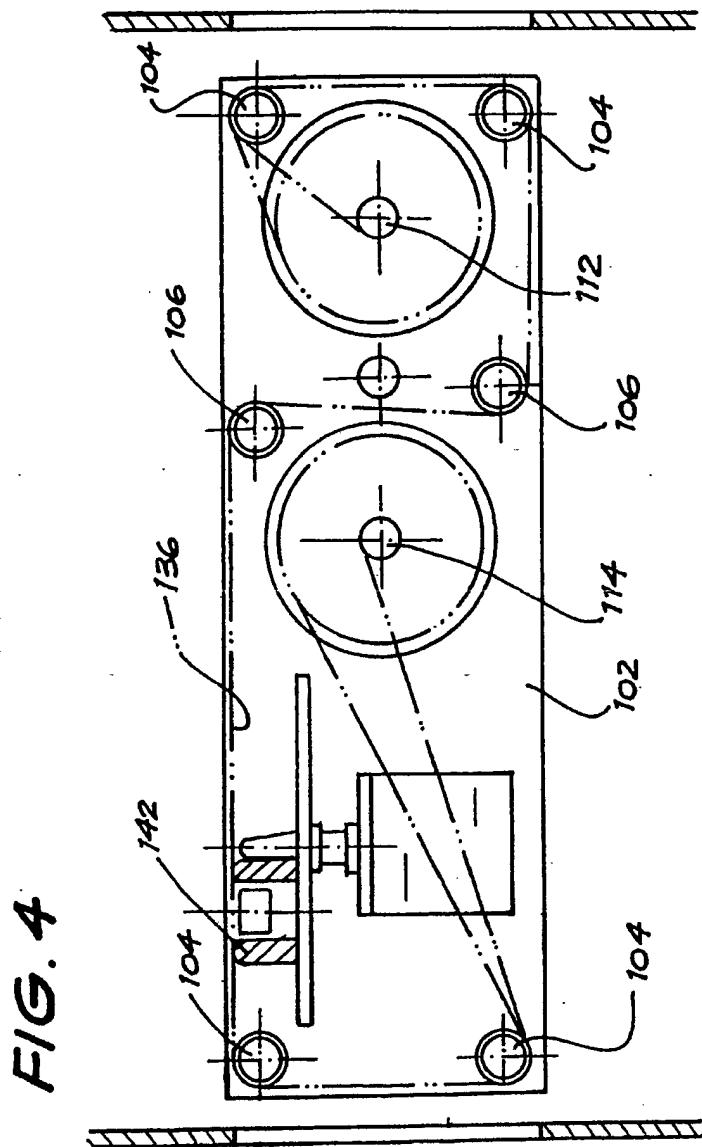


FIG. 4

**SPECIFICATION**  
**Data Handling Apparatus**

This invention concerns data handling assemblies for use by bookmakers and particularly portable apparatus for use on race courses.

- 5 Bookmakers who take bets on racecourses first enter the bet by hand in a ledger and in doing so make entries in several columns recording not only the value of the bet but also the extent by which laying the bet changes the bookmaker's liability. Simultaneously, another person writes a receipt for the punter. For the purpose of attracting bets the bookmaker displays a board carrying a printed list supplied by the Jockey Club which identifies the race, the runners' names and the runners' numbers.  
 10 Alongside the list pinned to the board are two columns in which the bookmaker writes the odds and opposite each column entry is a pair of identification buttons indicating whether the odds are forward or backward.

At the end of each race, the printed list is replaced by the list for the next race, punters present receipts and payments are made marked with the proportion of the sum allocated for tax purposes and  
 15 the taking of bets resumes.

These operations are time consuming, expensive in terms of clerical assistance and are subject to error.

Viewed from a first aspect the invention provides data handling apparatus for a bookmaker, comprising: storage means adapted to store and update data representing the sums wagered on each  
 20 of a number of possible events, the odds in respect of each possible event, and the total sum wagered; means adapted to calculate the bookmaker's liabilities for various possible outcomes, and means adapted to display selected portions of the data.

In a preferred embodiment, the apparatus has a micro-processor which has automatic functions for progressively totalling the liability and the total sums bet on each event, for example a particular  
 25 runner winning a race, as the input information proceeds. In addition the memory provided for the micro-processor may store such other information as the bookmaker may require in dependence upon the programme which directs the operations of the microprocessor. Thus the apparatus may comprise a video display unit for reading out the totals of financial sums wagered and the liability at the end of each entry, and a wager entering means. Preferably a display device is provided which is capable of  
 30 visibly presenting odds in respect of each contestant. One embodiment of display device includes a display board which has a support surface adapted to hold on public view a removable sheet bearing a row of names and numbers identifying contestants, and alongside the sheet is provided a row of windows in each of which a set of numbers that indicate odds are displayed on a reeled belt. The belt may be provided with code for each set of numbers whereby as the displayed odds are changed by  
 35 rotating a reel, a sensor with an input connection to the data storing means detects the code. Thus, in this embodiment the display device for the odds includes means for entering the odds in respect of each vent into the storage means.

In an alternative embodiment, the odds may be displayed on an electronic display device.

The microprocessor may also control a print out mechanism for issuing receipts or recording  
 40 betting tax increments or tax totals as necessary.

Viewed from a second aspect, the invention provides a data handling assembly for use by a bookmaker comprising  
 (a) data storing means suitable for storing data representing financial sums, wager odds, types of wagers, the identity of the contestant upon which the sum is wagered;  
 45 (b) wager entering means suitable for entering and verifying data representative of wager sums, including information concerning wager odds, types of wagers and contestant identity in the data storage means;  
 (c) comparing means which in use read out and compare the total financial sum wagered on all contestants with the total of the bookmaker's liabilities in a contest in order to provide a basis for either  
 50 adjusting odds or laying a compensating wager.

Alternatively the comparing means may read out and compare the total financial sum wagered on all contestants with the bookmaker's largest individual liability in a contest in order to provide a basis for either adjusting odds or laying a compensating wager.

One embodiment of the invention will now be described by way of example only with reference to  
 55 the accompanying drawings in which

Fig. 1 is a diagram of the display board incorporating the ticket printer; the visual display unit; the keyboard incorporating the verifying display; the ledger printer.

Fig. 2 is a block diagram of the components.

Fig. 3 is a top view of an odds indicator with the belt removed.

60 Fig. 4 is a side view of the odds indicator of Fig. 3 with the side wall removed.

Referring now to the drawings, the assembly is intended to operate on a supply of mains electricity supplied by cables on a racecourse. The display device is a box 2 with a vertical front panel 4 to which is clipped a Jockey Club list (not shown) of horses for a particular race. Alongside the panel 4 at positions opposite the name of each horse is a window 6 behind which is mounted an odds indicator

to be described later. Knobs 8 permit the odds to be changed in each window. The box contains all the components apart from the ledger printer 18 visual display unit 10 and keyboard unit 12 incorporating the verification display 13.

In particular the box 2 houses a ticket printer which issues tickets through slot 16. The line printer 5 18 is standard. Spaces 20 identify the number of each runner. The mains input module 22 supplies current to all the components as shown except to the visual display unit 10 and the printer 18. The Z-80 microprocessor 24 receives program instruction from a floppy disc 26 and data input sold by ATL Pty. Ltd. of Sydney. A ticket printer 28 also sold by ATL Pty. Ltd. of Sydney is supplied with thermo sensitive paper by print paper transporter 30. A logic board 32 unites the various peripheral 10 components including the odds indicators 34 which are next described.

Each odds indicator device is constructed as a unit which is fixed to the rear of vertical panel 4 (see Fig. 1) of the display board 2 each in register with a window 6. Each indicator consists of a pair of mutually parallel side plates 102 connected by four rods 104. Two guide rods 106 also span the plates. A pair of sintered bearings 108, 110 support an upper shaft 112, 114 each of which carries a 15 pinion 116, 118 and reel discs 120, 122. Each shaft is braked by a spring and washer assembly 124. A pair of bearings 126 supports a drive shaft 128 having a pinion 130 the boss of which has a diagonal slot 132 wherein pin 134 is free to slide. Belt 136 (shown in Fig. 4) is wound from shaft 112 over rear rods 104 horizontally through guide rods 106 and thence vertically downwards to front rods 104 before carrying on to shaft 114. The belt has 58 combinations of odds numbers on the front face (not 20 shown) and a seven-channel bar code printed on the reverse face. The code is a standard Grey code modified to read even parity and to give a blind position within the window (not shown) where the odds are read. The seven channels are read by a bank of reflective optical sensors 142 which are mounted on a printed circuit board 144 fixed behind the belt and extend laterally across the device. The values which the sensors detect are scanned by the logic circuit 32. The values are thus converted to 25 data and placed on a common bus via triple state buffers. The shaft 128 has a knob 8 which the bookmaker rotates forwards or backwards to change the odds. The logic circuit monitors each sensor at least once a second and if the odds belt is only partly in register or there is any discrepancy an indicator signal is operated so that the necessary adjustment can be made.

To cater for the situation where punters may be located behind as well as in front of the odds 30 indicator, an alternative embodiment allows the display of contestant names, numbers and odds on its rear surface. A second copy of the Jockey Club list may be attached to the rear vertical surface in which are located windows as in the front. Each odds indicator unit is aligned with both front and rear windows, and the odds are printed on both the front and rear of the odds belt. The front and rear print positions for each odd are offset so that it is displayed simultaneously through both front and rear 35 windows.

The assembly works as follows. A list of runners is available to a bookmaker prior to the day of the race. Accordingly the assembly can be programmed by entering the list of runners for each race well before the time when bets are expected to be placed. Before betting commences on a race, the venue name, race number, number of runners and runner names are entered taking notice of any 40 scratched runners. The bookmaker's name, those of his credit customers and those of other bookmakers are stored in the memory and are brought forward automatically.

The bookmaker next programmes the assembly to take bets by adjusting knobs 8 to indicate appropriate odds in windows 6.

A bet commences when the bookmaker puts the assembly into Win mode; keys in the number of 45 the horse (say 5) and the sum wagered, say \$1.00. The logic circuit scans the odds for the horse concerned and the microprocessor multiplies the appropriate odds by the wager to establish liability if the horse wins. The microprocessor also adds the wager to any previous wager on the same horse. After a few bets the ticket printer will have issued a ticket to each punter recording the bookmakers name, the race details, the horse number, the type of bet, the wager sum and the odds, and the visual 50 display unit may appear as follows. Note that none of the liabilities under Win exceed the Total Held which represents the total of mony invested by punters on the race.

	Harold Park Trots	Race 1 Odd	Held	Win	
5	1 Captain Marvel	7	142	994	
	2 Handy Henry	5	200	1000	
	3 Fulla Style	12	83	996	5
	4 Knowing Hanover	10	100	1000	
	5 High Bidder	15	66	990	
	6 Melina's Daughter	15	66	990	
10	7 Lysswin	10	100	1000	
	8 Asidrop	2	500	1000	10
	9 Tarnita Peak	20	50	1000	
	10 Mighty Prince	3	330	990	
Total Held			1637		

The next bet is for \$10 at 7-1 on runner 1. The updated screen is shown below. The effect of this  
 15 bet is reflected in the held and liability figures for runner 1, and in the total held figure. The bookmaker is 15  
 still in a non-losing position.

	Harold Park Trots	Race 1 Odd	Held	Win	
20	1 Captain Marvel	7	152	1064	
	2 Handy Henry	5	200	1000	20
	3 Fulla Style	12	83	996	
	4 Knowing Hanover	10	100	1000	
	5 High Bidder	15	66	990	
	6 Melina's Daughter	15	66	990	
25	7 Lysswin	10	100	1000	25
	8 Asidrop	2	500	1000	
	9 Tarnita Peak	20	50	1000	
	10 Mighty Prince	3	330	990	
Total Held			1647		

30 The next bet is \$200 at 10-1 on runner 4. The updated display is shown below. The bookmaker 30  
 notes that the possible Win liability for runner 4 exceeds the Total Held for the race.

	Harold Park Trots	Race 1 Odd	Held	Win	
5	1 Captain Marvel	7	152	1064	
	2 Handy Henry	5	200	1000	
	3 Fulla Style	12	83	996	5
	4 Knowing Hanover	10	300	3000	
	5 High Bidder	15	66	990	
	6 Melina's Daughter	15	66	990	
10	7 Lysswin	10	100	1000	
	8 Asidrop	2	500	1000	10
	9 Tarnita Peak	20	50	1000	
	10 Mighty Prince	3	330	990	
Total Held			1847		

To reduce his liability on runner 4, the bookmaker takes a layoff bet with another bookmaker. The 15 layoff is \$150 at 10-1 on runner 4. The bookmaker's Win liability on runner 4 is reduced to be less than 15 the Total Held on the race, so he is in a non-losing position again. The updated display is shown below.

	Harold Park Trots	Race 1 Odd	Held	Win	
20	1 Captain Marvel	7	152	1064	
	2 Handy Henry	5	200	1000	20
	3 Fulla Style	12	83	996	
	4 Knowing Hanover	10	150	1500	
	5 High Bidder	15	66	990	
	6 Melina's Daughter	15	66	990	
25	7 Lysswin	10	100	1000	25
	8 Asidrop	2	500	1000	
	9 Tarnita Peak	20	50	1000	
	10 Mighty Prince	3	330	990	
Total Held			1697		

30 Also the bookmaker may reduce the odds for runner 4, to ensure that its liability remained below 30 the total Held for that race.

#### CLAIMS

1. Data handling apparatus for a bookmaker, comprising: storage means adapted to store and update data representing the sums wagered on each of a number of possible events, the odds in 35 respect of each possible event, and the total sum wagered; means adapted to calculate the 35

- bookmaker's liabilities for various possible outcomes, and means adapted to display selected portions of the data.
2. Data handling apparatus as claimed in claim 1 further comprising means for selectively entering the odds in respect of each event.
- 5 3. Data handling apparatus as claimed in claim 2 further comprising a display device adapted to display selected odds in respect of each event, said device including sensing means adapted to detect the odds selected and providing an input to the storage means. 5
- 10 4. Data handling apparatus as claimed in claim 3 wherein the display device comprises a display board having a plurality of windows in each of which the odds in respect of a particular event are displayed on a movable belt, each belt bearing a plurality of different possible odds and being coded such that a sensor connected to the storage means may detect which particular odds are being displayed in each window. 10
- 15 5. Data handling apparatus as claimed in claim 4 wherein each belt forms part of a separate odds display unit, which units are mounted behind respective windows of the display board, each unit including parallel rotatable reels about which the belt is wound, and a manually operable mechanism capable of winding the belt backwards and forwards. 15
6. Data handling apparatus as claimed in claim 4 or 5 wherein the belt includes a multi-channel bar code, and the sensor is a multi-channel optical sensor which provides input information to the data storage means.
- 20 7. Data handling apparatus as claimed in claim 5, 6 or 7 wherein the data storage means monitors the information provided by the sensors at predetermined intervals. 20
8. Data handling apparatus as claimed in claim 1 or 2 further comprising a display device connected to the storage means which provides a visual representation of the odds in respect of each event.
- 25 9. Data handling apparatus as claimed in claim 8 wherein said display device comprises a display board provided with liquid crystal displays. 25
10. Data handling apparatus as claimed in any preceding claim further comprising means for automatically printing and issuing individual betting slips.
- 30 11. A data handling assembly for use by a bookmaker comprising:  
(a) data storing means suitable for storing data representing financial sums, wager odds, types of wagers, the identity of the contestant upon which the sum is wagered; 30  
(b) wager entering means suitable for entering data representative of wager sums, including information concerning wager odds, types of wagers and contestant identity in the data storage means;
- 35 (c) comparing means which in use read out and compare the total financial sum wagered on all contestants with the total of the bookmaker's liabilities in a contest in order to provide a basis for either adjusting odds or laying a compensating wager. 35
12. A data handling assembly for use by a bookmaker comprising:  
(a) a data storing means suitable for storing data representing financial sums, wager, odds, types 40  
of wager, the identity of the contestant upon which the sum is wagered;  
(b) wager entering means suitable for entering data representative of wager sums, including information concerning wager odds, types of wagers and contestant identity in the data storage means;  
(c) comparing means which in use read out and compare the total financial sum waged on all 45 contestants with the bookmaker's largest individual liability in a contest in order to provide a basis for either adjusting odds or laying a compensating wager.
13. A data handling assembly as claimed in claim 11 or 12 comprising a visual display unit for reading out the totals of financial sums wagered and the liability at the end of each entry; a wager entering means and a display device capable of visibly presenting odds in respect of each contestant.
- 50 14. A data handling assembly as claimed in claim 13 wherein the display device includes a display board which has a support surface whose purpose is to hold on public view a removable sheet bearing a row of names and numbers identifying contestants and alongside the sheet when affixed, a like row of electronic number display panels which in use display odds, one panel being situated opposite each name and number, all panels arranged to be controlled by the data storage means in dependence upon the wager entering means. 50
- 55 15. A data handling assembly as claimed in claim 14 wherein the number display panels are liquid crystal display devices.
16. A data handling assembly as claimed in claim 13 wherein the display device includes a display board which has a support surface whose purpose is to hold on public view a removable sheet bearing a row of names and numbers identifying contestants and alongside the sheet when affixed, a like row of windows in each of which a set of numbers that indicate odds are displayed on a reeled belt and the belt bears a code for each set of numbers whereby as the odds are changed by rotating the reel, a sensor with an input connection to the data storing means reads the code and permits a read out of the odds. 60

17. A data handling assembly as claimed in claim 16 wherein the reeled belt forms part of a separate odds display device comprising a frame fixed behind the respective windows of the display device; a pair of mutually parallel reels each mounted in the frame, a belt wound on to both reels bearing both odds numbers and a machine readable code, a sensor mounted in the frame capable of reading the code as the latter moves past the sensor, a manually operable mechanism capable of winding the belt forwards and backward. 5
18. A data handling device as claimed in claim 17 wherein the code is a multi-channel bar code and the sensor is a multi-channel optical sensor which in use delivers input information regarding the code to the data storing means.
- 10 19. A data handling device as claimed in claim 17 or 18 wherein the data storing means monitors the information provided by the sensors in every odds display device at predetermined intervals. 10
20. A data handling assembly as claimed in any one of the preceding claims wherein a print out means suitable for issuing an individual record of a wager including wager information relevant for the purpose of a punter, is arranged to be controlled by the data storage means in dependence upon the 15 wager entering means.
21. A data handling assembly as claimed in any one of the preceding claims wherein the wager entering means is an ASC II keyboard. 15
22. Data handling apparatus substantially as herein described with reference to the accompanying drawings.

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